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The Prevalence of Problem Drug Use in Lithuania

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Key words: *problem drug use; prevalence; capture-recapture method; opioid users.*

Summary. *The aim of this study was to estimate and assess the prevalence of problem drug use in Lithuania.*

Materials and Methods. The capture-recapture method was used to estimate the prevalence of problem drug use. For the study, the data concerning problem drug users were collected from the databases of health care and law enforcement institutions. The target group consisted of permanent users (aged 15–64 years) of heroin and other opioids and/or a combination of drugs.

Results. In Lithuania, 431 monitored problem drug users were identifed in 2005, 482 in 2006, and 447 in 2007. The male-to-female ratio among the monitored problem drug users was 6:1 in 2006 and 4:1 in 2005 and 2007. The mean age of the monitored problem drug users was 26.8 years in 2005, 27.6 years in 2006, and 28.0 years in 2007. In total, 5699 problem drug users were identified (95% CI, 5552 to 5849) in 2005, 5800 (95% CI, 5652 to 5951) in 2006, and 5458 (95% CI, 5314 to 5605) in 2007. According to the gathered data, the prevalence of problem drug use was 2.3 cases per 1000 Lithuanian population aged 15–64 years in 2005, 2.5 in 2006, and 2.4 in 2007.

Conclusions. The study showed one of the lowest prevalence of problem drug use in Lithuania as in Germany, the Netherlands, Greece, and Cyprus. In 2005–2007, problem drug users were mainly young men of employable age in Lithuania.

Introduction

Due to the regular use of opioids, use of injecting drugs and, in some countries, popular use of stimulants, health and social problems caused by drug use have become more and more severe in Europe. Though the overall number of individuals using abovementioned substances is not high compared with the number of users of drugs and psychotropic substances in general population, the impact of drug use problems on the society is significant. Seeking to facilitate the analysis of the scope of this problem and to provide a possibility to monitor its tendencies, the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) together with the EU member states have taken efforts to define the notion "problem drug users"' (PDUs) and to develop strategies, which would facilitate estimation of the scope and impact of this problem. Problem drug use is defined as "injecting drug use or long-duration/regular use of heroin, cocaine and/or amphetamines." This definition usually covers the use of other opioids, such as methadone, too (1).

Problem drug users are defined as injecting drug users or regular users of heroin and other opioids (including illicit methadone and buprenorphine), cocaine and/or amphetamine (including methamphetamines, but excluding ecstasy). However, this definition does not include users of cannabis (marijuana) (2–4).

The definition of problem drug users by the EMCDDA was very useful in the 1980s and 1990s, when the use of opioids and injecting drugs was considered the main element of drug addiction necessary to be estimated quantitatively. Besides, it was not possible to achieve a reliable estimation by interviewing methods. After amphetamines emerged, this definition suited several Nordic countries where injecting amphetamine was intensively used (3).

Currently, applying the indicator of problem drug users, the EU member states adapt the definition of PDUs to the national conditions; thus, the situation is very different. In fact, 9 EU member states apply the EMCDDA definition without any changes; 11 EU member states count solely the number of opioid users (or solely heroin users); and 4 EU member states also include problem users of cannabis though the latter usually account for a minor number of drug users (the criteria for inclusion of cannabis users are rather stringent: only users who are dependent on it or use it very intensively are included) (3, 5).

In Lithuania, the estimation of the prevalence of problem drug use was performed only in 2007, implementing the regional project of the United Na-

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tions Office on Drugs and Crime (UNODC) "HIV/AIDS Prevention and Care Among Injecting Drug Users and in Prison Settings in Estonia, Latvia and Lithuania" (survey by Hay). The prevalence was estimated at the local level in Vilnius and Klaipėda.

The prevalence at the national level was computed by extrapolation of the obtained results. It was a pilot study, and its results are very useful to compare the prevalence of problem drug use in Vilnius and Klaipėda; however, it does not reflect the scope of the problem nationwide (2, 6). The national prevalence of problem drug use has not been surveyed in Lithuania. It is necessary to identify the number of opioid drug users in order to assess the need for treatment and to estimate what social and health care services are necessary to be developed for injecting drug users (IDUs) in order to protect the population against the spread of infectious diseases. This determined the aim of the scientific research work.

The aim of the study was to estimate and evaluate the prevalence of problem drug use in Lithuania.

Material and Methods

The information to estimate the prevalence of PDUs was collected using the data of various routine registers and databases. To carry out the study, various Lithuanian institutions managing personal data such as the State Mental Health Center, the Center for Communicable Diseases and AIDS, Lithuanian Department of Statistics at the Government of the Republic of Lithuania, the Department of Prisons under the Ministry of Justice, the Police Department under the Ministry of Interior, etc. were contacted to get the data collected by them.

The institutions were asked to provide the data possessed by them concerning registered persons using drugs and psychotropic substances indicating the following: gender, age, place of residence, a drug or psychotropic substance used, the method of use, the identified disease or death code according to the International Statistical Classification of Diseases and Related Health Problems (ICD-10), and other data, delivery of which is not prohibited or limited. The list of requested indicators and the data format were coordinated with each respective institution individually.

The data required for the study were provided by three public institutions, i.e., the State Mental Health Center, the Department of Prisons under the Ministry of Justice, and the Department of Informatics and Communications under the Ministry of Interior.

To estimate the prevalence of problem drug use, the capture-recapture method widely used in epidemiology and recommended by the EMCDDA was applied. The method allows estimating monitored PDUs and investigating collision, i.e., finding the same persons in different registers or databases.

Aiming at identification of recurring cases, the institutions were asked to provide an identification number of each case. This identification number of a case was produced by encoding a personal identification number. Encoding of personal data was made by the institutions themselves, which further delivered only safely encoded personal data. In order to encode personal data by rendering an identification number to a case, the institutions were obliged to use a safe encoding Message-Digest algorithm 5 (MD5) – a cryptographic hash function with a 128-bit (16 bites) hash value. MD5 encoding algorithm is one-way; thus, it is impossible to restore the personal data from the identification number of a case after encoding.

The identification number of a case allows comparing the statistical data provided by different institutions, which obtain more comprehensive statistical data of a better quality and computing the number of PDUs and their prevalence in Lithuania. A written permission to receive these data was issued by the State Data Protection Inspection.

For the purpose of the study, a definition of PDU was formulated. PDUs are permanent users of heroin and other opioids (including illicit methadone and buprenorphine) and/or multidrug users aged 15–64 years and registered within a year.

To estimate the number of monitored PDUs, selection of persons according to the definition was carried out using Microsoft Excel.

The database of the Department of Informatics and Communications under the Ministry of Interior did not include the data concerning used substances and did not allow selecting the number of monitored PDUs. The database of the Department of Prisons under the Ministry of Justice did not include the data concerning the year of registration and also did not allow selecting the number of monitored PDUs. These two databases were merged in order to estimate the number of monitored PDUs.

To estimate the number of PDUs, the capture-recapture method was used; the WinPepi software was used for the calculation. The software calculates the number of cases according the Champman formula:

$$N = [(n1 + 1)(n2 + 1)/(m + 1)] - 1,$$

where N indicates the total number of cases; n1, monitored cases solely in the first database; n2, monitored cases solely in the second database; and m, cases observed in both databases.

To identify collisions, i.e., monitored cases in both databases, the SPSS 13.0 was used. For the analysis of the number of monitored PDUs, the

difference between the groups was assessed using the χ^2 test. The difference was considered statistically significant when $P<0.05$.

To estimate the prevalence, the data concerning the population aged 15–64 years was taken from the Department of Statistics. The prevalence was calculated per 1000 population for the comparison purposes with the data of other surveys.

Results

Having analyzed the data of the State Mental Health Center concerning the registered persons using drugs and psychotropic substances due to mental and behavioral disorders, and in compliance with the definition of PDU, 299 PDUs (monitored individuals) (236 males and 63 females) were identified in 2005, 298 PDUs (241 males and 17 females) in 2006, and 283 PDUs (226 males and 57 females) in 2007.

The database of the Department of Informatics and Communications under the Ministry of Interior included the data of registered persons having committed criminal actions including disposal of drugs and psychotropic substances and their smuggling, the data of registered persons having committed criminal actions being intoxicated with drugs or psychotropic substances, and the data of drug and psychotropic substance users having committed criminal actions as well as their gender and age; however, no data regarding used substances were provided and it did not allow selecting the number of monitored PDUs.

The Department of Prisons under the Ministry of Justice provided the data concerning persons using drugs and psychotropic substances including their gender, age, dependence diagnosis, and the method of use; however, no data regarding the year of registration were available. Thus, it was not possible to estimate the number of monitored PDUs.

Having merged the two databases (the database of the Department of Informatics and Communications under the Ministry of Interior and the database of the Department of Prisons under the Ministry of Justice) and having examined the collision among the data as well as following the definition of problem drug users, 132 PDUs (monitored individuals) (116 males and 16 females) were identified in 2005, 193 PDUs (176 males and 17 females) in 2006, and 172 PDUs (144 males and 28 females) in 2007.

The results of our study revealed that in 2005 and 2006 male PDUs were more often registered with the law enforcement institutions compared with the database of the State Mental Health Center. Respectively, females were more often registered with the database of the State Mental Health Center than with the law enforcement institutions. Such a difference was statistically significant (Table 1).

The results allow stating that female PDUs contact for treatment help, while male problem drug users more often commit criminal actions in relation to disposal or use of drugs, or being intoxicated, and due to the above reasons, come in view of the law enforcement institutions.

The total number of monitored or "known" PDUs was 431 in 2005, 482 in 2006, and 447 in 2007. The majority of the monitored PDUs were men (Fig. 1).

The results of the study showed that the number of monitored PDUs by gender was as follows: 352 males and 79 females in 2005, 409 males and 73 females in 2006, and 363 males and 84 females in 2007. The male-to-female ratio among the PDUs was 6:1 in 2006 and 4:1 in 2005 and 2007.

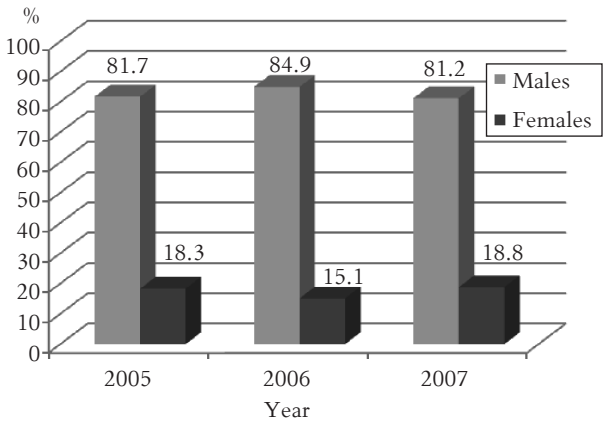

Fig. 1. Distribution of monitored problem drug users by gender, 2005–2007

Table 1. Distribution of Monitored Problem Drug Users by Gender in Individual Databases, 2005–2007

Registration Year	Gender	Database		χ^2	*df*	*P*
		SMHC (%)	DIC and DP (%)			
2005	males	78.9	87.9	4.899	1	0.027
	females	21.1	12.1			
2006	males	80.9	91.2	9.745	1	0.002
	females	19.1	8.8			
2007	males	79.9	83.7	1.05	1	0.305
	females	20.1	16.3			

SMHC, State Mental Health Center; DIC, Department of Informatics and Communications under the Ministry of Interior, DP, Department of Prisons under the Ministry of Justice.

Table 2. Age Characteristics (in Years) of Monitored Problem Drug Users, 2005–2007

Registration Year	N	Mean	Min	Max	Median	Mode	SD
2005	431	26.8	15	47	26	26	6.67
2006	482	27.6	15	57	26	24	7.17
2007	447	28.0	15	61	26	24	7.34

The mean age of the monitored PDUs was 26.8 years in 2005, 27.6 years in 2006, and 28.0 years in 2007. The youngest PDU was 15 years old in all years of the study. The oldest identified PDU in 2005 was 47 years old; in 2006, 57 years old; and in 2007, 61 years old. In most cases, the median age of the monitored PDUs was 26 years throughout the period of the study (Table 2).

The analysis of the results shows that throughout the studied years, the majority of the monitored PDUs belonged to the age group of 25–34 years (Fig. 2). It supports the statement that in Lithuania PDUs are young people of working age.

The study results show that in Lithuania, the majority of the monitored PDUs are opioid users, i.e., 309 individuals in 2005, 341 in 2006, and 304 in 2007 (Fig. 3).

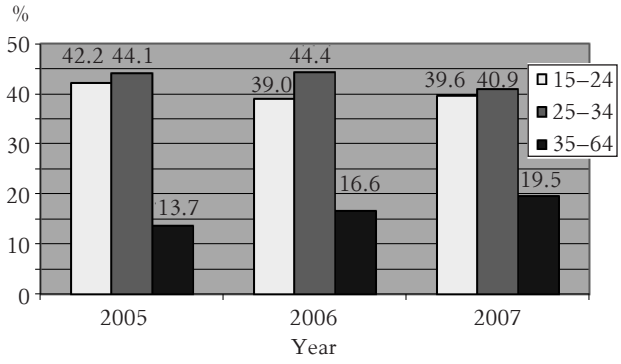

Fig. 2. Distribution of monitored problem drug users by age groups, 2005–2007

The study results also demonstrate that in 2005, the database of the State Public Health Center had 299 PDUs, and the database of the Department of Informatics and Communications and the Department of Prisons included 132 PDUs. Only 6 individuals were registered in both databases. The collision of individuals in both the databases is shown in Fig. 4. Making an assumption that the databases for 2005 are not related (the probability that an individual detained by police and the one not detained was recorded in the database of the State Public Health Centre is equal, and vice versa – individuals who contacted the State Public Health Centre in relation to treatment and individuals who did not contact had the same probability to be detained), it was estimated that 5699 PDUs (95% CI [Poisson], 5552 to 5849) were identified in 2005 in Lithuania.

Analysis of the study data concerning 431 monitored PDUs was carried out, and it was identified that the total number of PDUs in Lithuania in 2005 was 5699 individuals.

The study identified 298 PDUs in the database of the State Public Health Center and 193 PDUs in the database of the law enforcement institutions. Again it was found that 9 persons were registered in

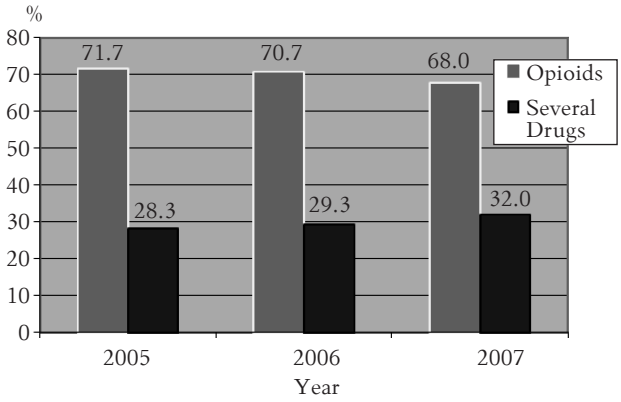

Fig. 3. Distribution of monitored problem drug users by used substance, 2005–2007

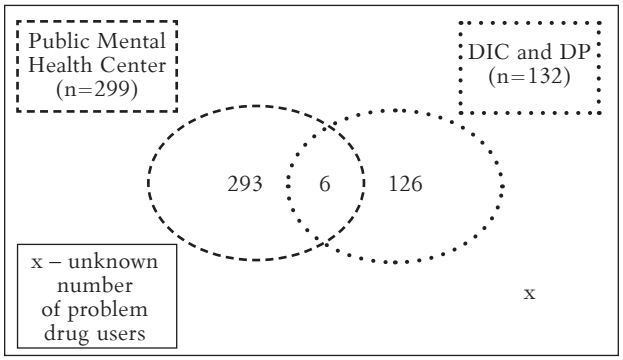

Fig. 4. Study data for analysis by the capture-recapture method investigating two databases to estimate the prevalence of problem drug use in Lithuania in 2005

DIC, Department of Informatics and Communications under the Ministry of Interior; DP, Department of Prisons under the Ministry of Justice

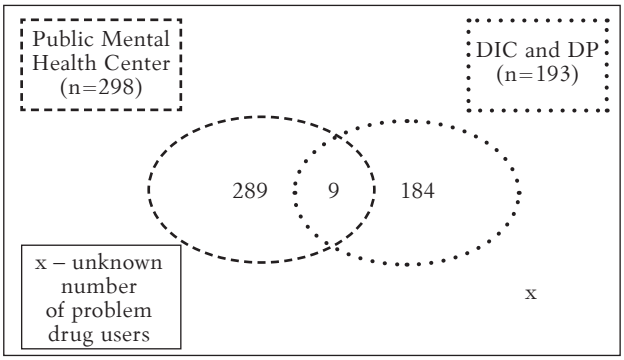

Fig. 5. Study data for analysis by the capture-recapture method investigating two databases to estimate the prevalence of problem drug use in Lithuania in 2006

DIC, Department of Informatics and Communications under the Ministry of Interior; DP, Department of Prisons under the Ministry of Justice.

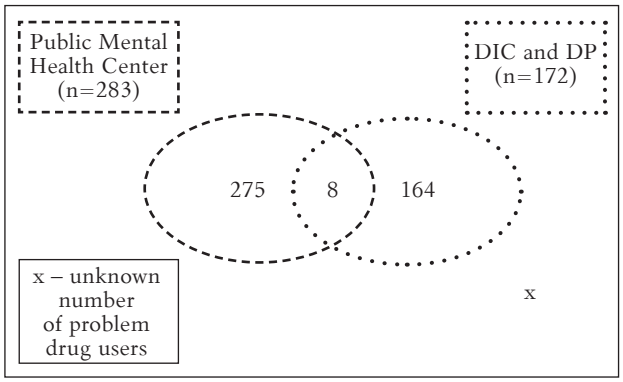

Fig. 6. Study data for analysis by the capture-recapture method investigating two databases to estimate the prevalence of problem drug use in Lithuania in 2007

DIC, Department of Informatics and Communications under the Ministry of Interior; DP, Department of Prisons under the Ministry of Justice.

both databases. The collision of individuals in these databases is shown in Fig. 5. Making an assumption that the databases for 2006 used for the study are not related, it was estimated that 5800 PDUs (95% CI [Poisson], 5652 to 5951) were identified in 2006 in Lithuania. Of the monitored PDUs, 8 individuals were in both databases. The collision of individuals in these databases is shown in Fig. 6. Making an assumption that the databases of the State Public Health Center and the law enforcement institutions for 2007 are not related, it was estimated that 5458 PDUs (95% CI [Poisson], 5314 to 5605) were identified in Lithuania in 2007.

Following the estimated number of the monitored PDUs and the total number of PDUs, it may be stated that our study covered one out of 12 PDUs in Lithuania in 2007.

The study calculated the prevalence of PDUs in Lithuania per 1000 population in the age group of 15–64 years in 2005, 2006, and 2007. The results are as follows: 2.3 PDUs per 1000 population in 2005, 2.5 PDUs in 2006, and 2.4 PDUs in 2007 (Fig. 7).

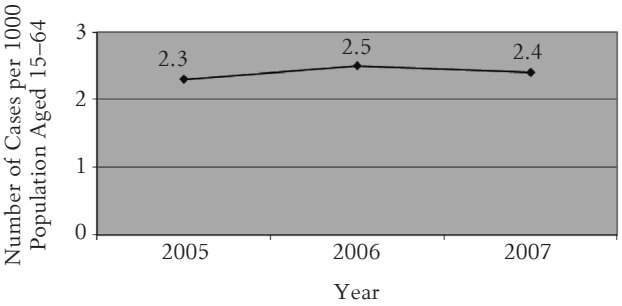

Fig. 7. Prevalence of problem drug use in Lithuania in 2005–2007

Discussion

For the analysis and assessment of the prevalence of problem drug use in the country, it is important to estimate the situation and prevalence in the neighboring countries. In Belarus, the survey of injecting drug users identified 10655 monitored PDUs in 2008 (7). The study revealed that 447 PDUs were monitored in Lithuania in 2007. The estimation of the prevalence of PDUs in Lithuania carried out by Hay showed that 588 "known" individuals were identified during 6 months in 2006 (6, 8), whereas our number of the monitored PDUs in 2006 was lower (482 individuals).

The study results show that the number of PDUs did not change significantly in Lithuania in 2005–2007 (5699 in 2005, 5800 in 2006, and 5458 in 2007).

The findings of the study Estimation of the Prevalence of Problem Drug Use in Lithuania carried out by Hay identified 4300 PDUs in 2006 (6, 8), whereas our study identified 5800 PDUs in 2006.

Comparison of the results of our study with the prevalence of problem drug use in Europe in 2005 revealed one of the lowest prevalences in our country (2.3 cases per 1000 population aged 15–64 years).

In 2005, the highest prevalence of PDUs in Europe was reported in the United Kingdom (10.2 cases per 1000 population aged 15–64 years), Denmark (10.2), and Italy (7.2) (9). The lowest prevalence of PDUs was in Hungary (3.5 cases per 1000 population aged 15–64 years); in the Czech Republic, Poland, and Finland, the prevalence of PDUs varied from 4 to 5 cases per 1000 population aged 15–64 years (3, 10–12).

The findings of the study show that the prevalence of PDUs in Lithuania in 2006 was one of the lowest in Europe as compared with other countries. In Greece, the prevalence of problem drug use was also very low, i.e., 2.7 cases per 1000 population aged 15–64 years (3). As in 2005, the highest prevalence of PDUs was in the United Kingdom (9.9), Italy (8.5), and France (6.8). In the Czech Republic, Germany, Latvia, and Slovakia, the prevalence of PDUs in 2006 varied from 3 to 5 cases per 1000 population aged 15–64 years (3, 11, 13–16).

In 2007, the prevalence of PDUs in Lithuania was 2.4 cases per 1000 population aged 15–64 years. Though the data regarding the prevalence of PDUs in other countries are scarce, the EMCDDA was provided with the official data from the Czech Republic, Greece, Italy, Cyprus, and Slovakia, and the findings of our study compared with other countries show that Lithuania is among countries with the lowest prevalences.

In 2007 as in 2005 and 2006, the highest prevalence was in Italy, i.e., 8.6 cases per 1000 population aged 15–64 years (9). In Greece, the prevalence

of PDUs in 2007 remained at the same level as in 2006, i.e., 2.7 cases per 1000 population aged 15–64 years (3). In the Czech Republic, the prevalence of PDUs in 2007 was 4.2 cases per 1000 population aged 15–64 years and remained almost at the same level since 2005 (3).

In Slovakia, as in the Czech Republic, the prevalence of PDUs remained at the same level in 2005–2007, i.e., from 4 to 5 cases per 1000 population aged 15–64 years (11). In Cyprus, the prevalence of problem opioid and stimulant drug use in 2007 was 3.7 cases per 1000 population aged 15–64 years (3). Compared with the data in other countries, this indicator is among the lowest ones.

In 2006, the European Commission report on the prevention of drug and psychotropic substance use and harm reduction distinguished 3 prevalence groups of PDUs: low prevalence, fewer than 4 cases per 1000 population aged 15–64 years; moderate prevalence, from 4 to 7 cases per 1000 population aged 15–64 years; and high prevalence, more than 7 cases per 1000 population aged 15–64 years (16).

Through the analysis and comparison of the findings of our study with the results of other countries, it was established that the highest prevalence of PDUs (8 and more cases per 1000 population aged 15–64 years) was in the United Kingdom, Spain, Italy, Luxembourg, and Estonia. The lowest prevalence (fewer than 4 cases per 1000 population aged 15–64 years) was observed in Germany, Greece, and Cyprus.

In 2006, the Trimbos Institute (the Netherlands) in cooperation with the European Commission carried out a study and published the report and recommendations concerning the prevention of drug and psychotropic substance use and harm reduction. The report provides the prevalence of PDUs in European countries. In this report, Lithuania together with Belgium, Cyprus, the Czech Republic, Estonia, Greece, Finland, France, Hungary, Latvia, Malta, Sweden, Slovakia, and Slovenia was attributed to the group of countries where the prevalence of PDUs was 4 to 7 cases per 1000 population aged 15–64 years. The results of our study showed lower prevalence, i.e., 2.3 cases per 1000 population aged 15–64 years in 2005, 2.5 in 2006, and 2.4 in 2007. Such a difference between the results of our study and the report may be explained by the fact that in 2006, the EMCDDA provided average calculations of the drug addiction in the European Union, i.e., 4 to 7 cases per 1000 population aged 15–64 years, and applied it to the countries including Lithuania in which the survey of the prevalence of problem drug use had not been carried out. It is important to mention that the EMCDDA underlined that these figures were not reliable and needed to be adjusted having received more data from the new member states (4, 16–22).

Conclusions

In 2005–2007, a stabilization tendency of the number of monitored problem drug users was observed in Lithuania. Problem drug users were mainly young persons of employable age. The majority of the monitored problem drug users were opioid users. In Lithuania, one of the lowest prevalence of problem drug use was observed, i.e., fewer than 4 cases per 1000 population aged 15–64, as in Germany, the Netherlands, Greece, and Cyprus. There were 4 to 7 cases per 1000 population aged 15–64 in Poland and Latvia and more than 8 cases – one of the highest prevalence – in Estonia.

Statement of Conflict of Interest

The authors state no conflict of interest.

Probleminių narkotikų vartojimo paplitimas Lietuvoje

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Raktažodžiai: probleminių narkotikų vartojimas, paplitimas, „pagauk-vėl pagauk“ metodas, opioidų vartotojai.

Santrauka. *Tyrimo tikslas.* Nustatyti ir įvertinti probleminių narkotikų vartojimo paplitimą Lietuvoje.

Tyrimo medžiaga ir metodai. Probleminių narkotikų vartojimo paplitimui nustatyti buvo taikomas „pagauk-vėl pagauk“ metodas. Duomenys apie probleminius narkotikų vartotojus atrinkti iš sveikatos priežiūros ir teisėsaugos institucijų duomenų bazių. Tikslinę grupę sudarė 15–64 metų žmonės, pastovūs heroino ir kitų opioidų ir (ar) kelių narkotikų vartotojai.

Rezultatai. 2005 m. Lietuvoje buvo išaiškintas 431 stebimas probleminis narkotikų vartotojas, 2006 m. – 482, 2007 m. – 447. Stebimų probleminių narkotikų vartotojų vyrų ir moterų santykis 2006 m. – 6:1, 2005 ir 2007 m. – 4:1. Stebimų probleminių narkotikų vartotojų amžiaus vidurkis 2005 m. buvo 26,8 metų, 2006 m. – 27,6, 2007 m. – 28,0 metai. Lietuvoje 2005 m. išaiškinti 5699 probleminiai narkotikų vartotojai (95 proc. pasikliautinasis intervalas (PI) 5552–5849), 2006 m. – 5800 (95 proc. PI 5652–5951) ir 2007 m. –

5458 (95 proc. PI 5314–5605). Remiantis šiais duomenimis, apskaičiuotas probleminių narkotikų vartotojų paplitimas: 2005 m. 1000 15–64 metų Lietuvos gyventojų teko 2,3 probleminių narkotikų vartotojų, 2006 m. – 2,5, 2007 m. – 2,4.

Išvados. Tyrimas parodė, kad Lietuvoje vienas mažiausių probleminių narkotikų vartojimo paplitimų kaip ir Vokietijoje, Nyderlanduose, Graikijoje bei Kipre. 2005–2007 m. Lietuvoje probleminiai narkotikų vartotojai dažniausiai buvo jauni, darbingo amžiaus vyrai.

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